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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHAKRABARTI, ARUN K

ART UNIT PAPER NUMBER

1634

DATE MAILED: 12/10/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
**09/583,342**

Applicant(s)  
**Bushman**

Examiner  
**Arun Chakrabarti**

Art Unit  
**1634**



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Nov 18, 2002
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-16, 20, 22, and 23 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16, 20, 22, and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 6) ☒ Other: Detailed Action

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## DETAILED ACTION

### *Specification*

1. Claims 1 and 20 have been amended and new claims 22 and 23 have been added.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 1-16, 20, 22, and 23 are rejected under 35 U.S.C. 102 (a) as being anticipated by Lynch et al. (U.S. Patent 5,998,152) (December 7, 1999).

Lynch et al teach a high-throughput method of screening compounds capable of modulating topoisomerase activity (Abstract and Column 3, line 65 to Column 4, line 6) comprising:

a) incubating at least a first nucleic acid, a topoisomerase and a potential topoisomerase-modulating compound, wherein the nucleic acid comprises at least one tag (Figures 1-4 and Examples 1-3 and Column 19, lines 25-32), and

b) assaying for nucleic acid religation product (Figures 1-4 and Column 19, line 32-60).

Lynch et al teach a high-throughput method, wherein the nucleic acid is DNA and RNA (Column 9, lines 33-47).

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Lynch et al teach a high-throughput method, wherein the at least one tag is a detection tag or an affinity tag (Column 2, lines 36-49 and Column 10, line 21 to Column 12, line 64).

Lynch et al teach a high-throughput method, wherein the method comprises incubating at least a first nucleic acid and a second nucleic acid ((Figures 1-4 and Examples 1-3 and Column 19, lines 25-32).

Lynch et al teach a high-throughput method, wherein the second nucleic acid is a religation strand comprising oligonucleotides operatively associated with at least one marker tag (Column 5, lines 6-67 and Figures 1-4).

Lynch et al teach a high-throughput method, wherein the first nucleic acid is operatively associated with an affinity tag and the second nucleic acid is operatively associated with a detection tag (Column 14, line 30 to column 16, line 13).

Lynch et al teach a high-throughput method, wherein the assay detects for topoisomerase inhibitors and activators (Column 1, line 13 to column 2, line 49).

Lynch et al teach a high-throughput method, wherein the topoisomerase is a Type I or Type II or Type III or Type IV isomerase (Column 5, lines 5-67).

Lynch et al teach a high-throughput method, wherein assaying comprises measuring the level of nucleic acid religation activity in the presence and absence of the topoisomerase modulating compound (Figures 1-4 and Column 19, line 25 to Column 21, line 16).

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Lynch et al teach a high-throughput method, wherein the level of religation activity is inversely proportional to the effectiveness of the topoisomerase-inhibitory compound (Column 20, lines 4-8).

Lynch et al teach a high-throughput method, wherein step (a) is performed on a solid support (Figures 1, 3 and Column 15, lines 38-65 and Column 17, lines 23-63).

Lynch et al teach a high-throughput method, wherein step (a) is performed in a liquid phase (Column 17, line 65 to Column 19, line 50).

Lynch et al teach a high-throughput method, wherein the nucleic acid and topoisomerase are covalently complexed, wherein the topoisomerase retains its religation activity (Column 15, lines 11-15 and Figure 1).

Lynch et al teach a kit for screening compounds that modulate topoisomerase religation activity comprising:

- a) a substrate nucleic acid comprising a first tag,
- b) a religation nucleic acid comprising a second tag and a 5'-OH,
- c) a topoisomerase, and
- d) a means for measuring a covalently linked product comprising (a) and (b) in a test mixture comprising a), b) and c) in the presence or absence of a topoisomerase modulating compound (Column 2, lines 37-52 and Column 21, lines 18-63 and Column 10, line 55 to Column 11, line 23).

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Lynch et al teach a method to identify a compound that modulates topoisomerase activity comprising:

(a) incubating a reaction mixture comprising a substrate nucleic acid, a religation strand, a topoisomerase, and a candidate compound; and

(b) assaying for intramolecular ligation of the substrate nucleic acid to form a and the religation strand to form a circular or hairpin nucleic acid (Abstract and Figures 1-4).

***Response to Amendment***

4. In response to amendment, 102(e) rejection has been withdrawn. However, a new 102(a) rejection has been included.

***Response to Arguments***

5. Applicant's arguments with respect to all pending claims have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CAR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CAR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arun Chakrabarti, Ph.D., whose telephone number is (703) 306-5818. The examiner can normally be reached on 7:00 AM-4:30 PM from Monday to Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones, can be reached on (703) 308-1152. The fax phone number for this Group is (703) 305-7401. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group analyst Chantae Dessau whose telephone number is (703) 605-1237.

**Arun Chakrabarti,**

**Patent Examiner,**

**December 4, 2002**

  
W. Gary Jones  
Supervisory Patent Examiner  
Technology Center 1600